

"During the day the frogs usually rested on the leaves; either on the upper or under side, with their bodies gathered together yet flattened, the fore-feet folded underneath their bodies and pupils contracted to tiny slits. This posture and their leaf green colour rendered them almost invisible among the leaves, for I often had difficulty in locating them even when they were right in front. When disturbed, they would leap, flashing their bright red foot-webbings.

"Every day around 7.30 p.m. house flies (*Musca domestica*) were collected in plastic bags. A small lamp was placed outside the aquarium at one corner to attract the flies to one spot when released in the darkened aquarium. The frogs soon learnt to assemble around the lamp to pick up the flies, which were provided until a lop-sided bulge saying "enough" was noticed on the sides of the frogs. At the beginning whenever the flies were released the frogs would leap at them and flick them up with their tongues, but later they took them only when the flies came within reach. Earthworms were also offered but ignored. Also only a

few blue-bottle flies (*Lucilia* sp.) were taken, being mostly ignored.

"I had these frogs with me for about two months, but one rainy night all escaped from a small gap which had remained uncovered when replacing the glass sheet. I heard them calling from adjoining Bougainville and guava trees for several nights, but was unable to trace them, for their call had a ventriloquistic quality."

The trip was much too short to make a representative collection but we hope to make another effort and do better. The cost of travelling to and from Goa was recovered from the Charles McCann Vertebrate Zoology Field Work Fund at the BNHS. All the arrangements in Goa were made by Mr. Louis P. Barbosa, Minister for Tourism and Urban Development and Mr. B. P. Sinha, Conservator of Forests, without whose assistance it would not have been possible to achieve even the little which we did. We would like to record our gratitude to the institutions and persons concerned for having made this trip possible.

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BOMBAY NATURAL HISTORY SOCIETY,
HORNBILL HOUSE, S. B. SINGH ROAD,
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July 14, 1987.

HUMAYUN ABDULALI

A. G. SEKAR

24. MOUTH BROODING IN THE NOBLE GOURAMI, *CTENOPS NOBILIS* (MCCLELLAND) (PISCES: BELONTIDAE)

Some fishes display parental care in that, after fertilization, the eggs are held by one of the parents inside its mouth until they hatch and, sometimes, even thereafter. This can be commonly seen in the marine catfishes of the genus *Tachysurus* (earlier *Arius*).

There has been no record of mouth brooding in an Indian freshwater fish. *Sarotherodon* (= *Tilapia*) *mossambicus* females do have mouth brooding habits, but they are estuarine fish and are not indigenous to India, having been introduced into India from Africa, and

which can live and even breed in fresh water.

One of us (S.R.S.) has been regularly obtaining live *Ctenops nobilis* (McClelland) from Bihar State. The fish are transported by rail in open cans, the journey taking some 46 hours. As the water in the cans may get warm during transport and oxygen in the water may be depleted, the fish undergo physiological stress. In several batches of *Ctenops nobilis* received between February and early May this year, we found many (from 60 to 100) dead fry. Enquiries with the supplier revealed that he had placed only adult *Ctenops nobilis* in the cans. The fry had obviously been spat out of the mouth by the adult fish. No other species of fish were transported in the can containing *Ctenops nobilis*, but as each can usually contains about 15 adults, we could not determine whether all the babies were spat out by one or many parents, and the sex of the parent doing mouth brooding.

On 29 April, 1987 two of the fish in the consignment showed considerably distended mouths. It was suspected that they might be brooding fry in their mouths. Each was separated in an aquarium. One of the fish, of 100 mm total length, spat out 103 fry, while the other, a smaller one, spat out 32 fry. The latter all soon died, together with the parent. The parent's mouth was seen to contain 15 parasitic worms, which might be the reason for

the mortality. The age of the fry could not be ascertained. The brooding parent is a male. Unlike other mouth brooders, once the parent spits out its fry, it does not take further care of the young. Nor do the fry, at any sign of danger, swim back into or near the parent's mouth. Since we obtained brooding parents from February to early May, this indicates the extent of the fish's breeding season.

Ctenops nobilis has been recorded from Northeastern Bengal, Bihar, Assam and Sikkim in India, and from Bangladesh. It belongs to the family Belontiidae. Indian members of this family include the Dwarf Gourami (*Colisa lalia*), Honey Gourami (*Colisa chuna*), Giant Gourami (*Colisa fasciata*), Thick-lipped Gourami (*Colisa labiosa*), and the Indian Paradise Fish (*Macropodus cupanus*). In all these, the male builds a nest of air bubbles, which are made sticky with its saliva. After fertilization, the male picks up the eggs, which are laid a few at a time, and spits them into the bubble-nest. After the female has completed laying eggs, she is vigorously chased away by the male, which guards the nest and keeps it from disintegrating by blowing more air bubbles on to it. There is, however, no mouth brooding in any of these fishes. Mouth brooding is suspected to occur in the Chocolate Gourami (*Sphaerichthys osphronemoides*) which comes from Malaysia and Indonesia.

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October 28, 1987.

B. F. CHHAPGAR